



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

H.A

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,811	07/23/2003	Christopher L. Chua	D/A3316	7775

7590 08/30/2006

Patent Documentation Center
Xerox Corporation
Xerox Square 20th Floor
100 Clinton Ave. S.
Rochester, NY 14644

EXAMINER

NGUYEN, TUAN N

ART UNIT PAPER NUMBER

2828

DATE MAILED: 08/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/625,811	Applicant(s) CHUA, CHRISTOPHER L.	
	Examiner Tuan N. Nguyen	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14, 16, 18 and 20-33 is/are rejected.
- 7) ☒ Claim(s) 15, 17 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/21/06; 7/31/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of 35 U.S.C. 102(b) which forms the basis for all obviousness rejections set forth in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 5-8, 12, 16, 21, 22, 33 are rejected under 35 U.S.C. 102(b) as being unpatentable over Thornton (US 6208681).

With respect to claims 1, 7, 12, 16, 21, 22 Thornton '681 shows and discloses an array of VCSEL including a first and second VCSEL (*Fig 6, 9-18; array of VCSEL including a first and second VCSEL; Col 3: description of drawing: Fig 9*) including a first and second or more laser apertures bounded by partial or complete oxidized wall (*Fig 18: 322,324,326*)(*Col 3: 1-15 oxidized regions between two adjacent cavities*)(*Col 6*), with a **single common electrode contact** simultaneously provide current to first and second or more VCSEL to causes mode coupling or locking between the VCSEL (*Col 3: 26-30 advantage of invention a transparent conductor is used to form the electrical contact in the high density laser array; or GROUND electrode is a single common electrode contract between the VCSEL*)(*Col 7: 15-40*)(*Col 8: 45-50, 60-67*), where the opening between the wall facilitate evanescent fields (*mode propagating inside the waveguide or light that passes from the core into the cladding*) to interact with the active region of the second or third VCSEL (*Col 5: 35-55*) (*Col 6: 25-35*). Since claim 22 recites the same or identical elements/limitations it is inherent to use patents ('681) to recite the method of forming an array of VCSEL, product by process. With respect to the Applicant's remarks and amendment filed 07/31/2006 " evanescent waves are generated by the evanescent

Art Unit: 2828

fields and nothing in Thornton suggests using evanescent fields to cause mode locking between adjacent lasers". The applicant only pointing out the prior art is identical except silent to an inherent characteristic. The examiner stands that the evanescent fields (*transient fields / waves* are generate when the VCSEL stimulate/trigger). MPEP 2121.01

With respect to claims 5,6 Thornton '681 discloses the transparent conductor contact, and where laser aperture passes through the transparent conductor (Col 7: 15-20, 40-50)

With respect to claim 8, Thornton '681 discloses the non-oxidized gap between the laser aperture (Col 6: 30-35).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or non-obviousness.

4. Claims 2-4, 9-11, 13-14, 18, 20, 23-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thornton (US 6208681).

With respect to claims 2, 4, 13, 20, 26, Thornton '681 discloses the above, the claim further require a high gain region positioned between first and second VCSEL to enhance mode coupling between first and second VCSEL. Thornton '681 did not discretely disclose the high gain region between first and second VCSEL, however Thornton '681 did disclose the dopants or ion implantation (Col 5: 30-40; 55-67)(Col 10) that could increase the high gain region to enhance mode coupling, as disclosed by applicant's specification sections [0022-0023].

With respect to claims 3, 14, 18, 25 Thornton '681 discloses the contact provide the current to the gain coupling region, or simultaneously pump current through first and second VCSEL. (Col 2: 40-50)(Col 7: 15-400) (Col 8: 60-67) (Col 1) (Fig 14, 15) show electrical contact (Fig 9: 132 and bottom electrode 134)(col 7: 45-50) it is inherent that the VCSEL array has a common electrode contact that enabling simultaneous lasing.

With respect to claims 9-11, the claims further require a plurality holes between the laser aperture. It has been held that where the general conditions of a claim are disclosed in the prior art, that the mere duplication of the essential working parts of a device involves only routine skill in the art. *St Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

With respect to claims 23-24 and Applicant's remark " there is nothing in the reference to suggest that dopant will increase the gain", Thornton '681 discloses the method of lateral oxidation, contact and doping to form high gain region (Col 6-7)(Col 7: 1-5 injecting p or n- type carriers resulting in optical amplification).

With respect to claim 27-32, (Col 5: 1-67) discloses the reflecting mirror structure and DBR to change the phase matching. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, in this case the amount of doping in substrate or mirror layer to form higher gain or loss region. *In re Aller*, 105 USPQ 233.

Allowable Subject Matter

5. Claims 15, 17 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The references of the record fail to teach or suggest:

Claim 15:

A high gain coupling region including high gain region coupling at least one opening in first oxide wall to the corresponding opening in the second oxide wall, the high gain coupling region also coupled to the contact provides current to high gain coupling region thereby facilitating mode coupling between first and second VCSEL.

Claim 17:

A plurality of high gain coupling regions including first high gain region coupling at least one opening in first oxide wall to second oxide wall and a second high gain region coupling second opening in first oxide wall to opening of the third oxide wall.

Communication Information

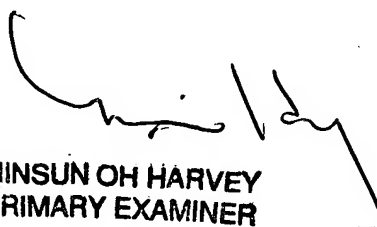
Art Unit: 2828

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan N Nguyen whose telephone number is (571) 272-1948. The examiner can normally be reached on M-F: 7:30 - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harvey Minsun can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan N. Nguyen



**MINSUN OH HARVEY
PRIMARY EXAMINER**